

CLAIMS

What is claimed is:

- 1 1. A method for retiring instructions processed through various processing stages
2 including an instruction queue, comprising the steps of:
3 processing the instructions until the instruction queue is full;
4 stopping processing the instructions in the various processing stages;
5 for each instruction in the instruction queue, if the instruction meets the
6 criteria for retirement, then
7 terminating the instruction; and
8 updating a system processing the instruction to reflect that
9 the instruction has been terminated.
- 1 2 The method of claim 1, after the instruction queue is full, further comprising the
2 step of requesting that instructions not be sent to the instruction queue.
- 1 3 The method of claim 1 wherein the step of terminating includes the step of
2 removing the instruction from the instruction queue.
- 1 4. The method of claim 1 wherein the various processing stages include one or more
2 of the following stages: fetching, issuing, sorting, executing, queuing, and retiring.
- 1 5. The method of claim 1 wherein the instruction capable of early retirement includes
2 an identification tag for identifying whether the instruction is capable of early
3 retirement.



1 6. The method of claim 1 wherein NO-OP instructions, pre-fetch instructions, branch
2 instructions, nullified instructions, and predicated-false instructions are identified
3 as instructions capable of early retirement.

1 7. The method of claim 1 wherein the criteria for early retirement are met when
2 continued processing the instruction does not change the architectural state of the
3 system processing the instruction.

1 8. The method of claim 1 wherein the criteria for early retirement are met when
2 continued processing the instruction does not change the behavior of a program
3 running the instruction.

1 9. A computer-readable medium embodying instructions that cause a computer to
2 perform a method for retiring instructions processed through various processing
3 stages including an instruction queue, the method comprising the steps of:

4 processing the instructions until the instruction queue is full;

5 stopping processing the instructions in the various processing stages;

6 for each instruction in the instruction queue, if the instruction meets the
7 criteria for retirement, then

8 terminating the instruction; and

9 updating a system processing the instruction to reflect that

10 the instruction has been terminated.

- 1 10 The computer-readable medium of claim 9 wherein the method, after the
2 instruction queue is full, further comprising the step of requesting that instructions
3 not be sent to the instruction queue.
- 1 11 The computer-readable medium of claim 9 wherein the step of terminating
2 includes the step of removing the instruction from the instruction queue.
- 1 12. The computer-readable medium of claim 9 wherein the various processing stages
2 include one or more of the following stages: fetching, issuing, sorting, executing,
3 queuing, and retiring.
- 1 13. The computer-readable medium of claim 9 wherein the instruction capable of early
2 retirement includes an identification tag for identifying whether the instruction is
3 capable of early retirement.
- 1 14. The computer-readable medium of claim 9 wherein NO-OP instructions, pre-fetch
2 instructions, branch instructions, nullified instructions, and predicated-false
3 instructions are identified as instructions capable of early retirement.
- 1 15. The computer-readable medium of claim 9 wherein the criteria for early retirement
2 are met when continued processing the instruction does not change the
3 architectural state of the system processing the instruction.
- 1 16. The computer-readable medium of claim 9 wherein the criteria for early retirement
2 are met when continued processing the instruction does not change the behavior of
3 a program running the instruction.

1 17. A system for retiring instructions processed through various processing stages
2 including an instruction queue, comprising:
3 first processing means for processing the instructions until the instruction
4 queue is full;
5 stopping means for stopping processing the instructions in the various
6 processing stages once the instruction queue is full;
7 second processing means for, for each instruction in the instruction queue
8 if the instruction meets the criteria for retirement,
9 terminating the instruction; and
10 updating the system to reflect that the instruction has been
11 terminated.

1 18. The system of claim 17 further comprising requesting means for, after the
2 instruction queue is full, requesting that instructions not be sent to the instruction
3 queue.

1 19. The system of claim 17 wherein the criteria for early retirement are met when
2 continued processing the instruction does not change the architectural state of the
3 system.

1 20. The system of claim 1 wherein the criteria for early retirement are met when
2 continued processing the instruction does not change the behavior of a program
3 running the instruction.